

Ultraviolet radiation-induced tumor necrosis factor alpha, which is linked to the development of cutaneous SCC, modulates differential epidermal microRNAs expression

Supplementary Material

S1 Table: List of genes found to be associated with various miRNA in DIANA (DNA intelligent analysis), MIRANDA, and Target Scan online databases.

miRNA name (mmu)	Predicted in DIANA	Predicted in MIRANDA	Predicted in TARGET SCAN
miR-196a-5p	Hoxc8, Epc2, Pbx1, Zbtb26, Prtg, Lin28b, Prlr, Slc9a6, Gan, Tmem194, Lcor, Igf2bp1, P4ha2, Hoxa7	Hoxc8, Epc2, Pbx1, Zbtb26, Prtg, Lin28b, Prlr, Slc9a6, Gan, Tmem194, Lcor	Hoxc8, Epc2, Pbx1, Zbtb26, Prtg, Lin28b, Prlr, Slc9a6, Gan, Tmem194, Igf2bp1
miR-196b-5p	Hoxa7, Epc2, Hoxc8, Igf2bp1, Nr6a1, Zbtb26, Prtg, Lin28b, Hmga2, Prlr, Slc9a6, Gan, Pbx1, Tmem194	Hoxa7, Epc2, Hoxc8, Igf2bp1, Nr6a1, Zbtb26, Prtg, Lin28b, Hmga2, Prlr, Slc9a6, Gan, Pbx1, Tmem194	Epc2, Hoxc8, Igf2bp1, Nr6a1, Zbtb26, Prtg, Lin28b, Hmga2, Prlr, Slc9a6, Gan, Pbx1, Tmem194
miR-377-3p	Rnf38, Nudt11, Anapc4, Setbp1, Zfp516, Celf2, Ube2d2, Zfp148, Phf6	Rnf38, Nudt11, Celf2, Ube2d2, Zfp148, Phf6	Rnf38, Nudt11, Setbp1, Celf2, Ube2d2, Zfp148, Phf6
miR-691	Bcl11b, Etv3, Tnrc6b, Zfp451, Celf2, Cntn1, Mmp16 , Zfp618, Sp9, Usp32, Sp1, Pitpnc1, Ccdc117	Bcl11b, Etv3, Tnrc6b, Zfp451, Celf2, Cntn1, Mmp16, Zfp618, Usp32, Sp1, Pitpnc1, Ccdc117	None
miR-206-3p	Foxp1, Gja1 , Crebl2, Coro1c, Slc44a1, Lrch1, AW549877, Hnrnpa3, Zfyve27, Bdnf , Hivep3, Fndc3a, Rnf165, Ptplad1 , Ust, Serp1, G6pdx, Twf1, Zfp36l2, Mmd , Pax7 , Fndc3b, Tmsb4x, Pdik1l, Ptprg	Foxp1, Gja1 , Crebl2, Coro1c, Slc44a1, Lrch1, AW549877, Hnrnpa3, Zfyve27, Bdnf , Hivep3, Fndc3a, Rnf165, Ptplad1 , Ust, Serp1, G6pdx, Twf1, Zfp36l2, Mmd, Pax7 , Fndc3b, Tmsb4x, Pdik1l, Ptprg	Foxp1, Gja1 , Crebl2, Coro1c, Slc44a1, Lrch1, AW549877, Hnrnpa3, Zfyve27, Bdnf , Hivep3, Fndc3a, Rnf165, Ptplad1 , Ust, Serp1, G6pdx, Twf1, Zfp36l2, Mmd , Pax7 , Fndc3b, Tmsb4x, Pdik1l, Ptprg (Green bold = experimentally validated

miR-3065-3p	Lox, Nfatc3, Dot1l, Al593442, Adamts17, Slc30a3, Nav3, Ing4, Gulp1, Col7a1, Nasp, Unc45a, Fubp1	None	None
miR-322-5p	Ubfd1, Atxn7l3b, Luzp1, Atxn7l3, Spryd3, Rasgef1b, Prdm11, Sox6, Pappa, Rfx3, Akt3, Rnf111, Shoc2, Mybl1, Rbms1, Apln, Col12a1, Clock, Bcl2l2, Lhx4, Zdhhc24, Eif2c1, Pcmb1, Ski, Wdtc1, Dll1, Eif2c4, Ptpr, Cc2d1b, Myt1l	Ubfd1, Luzp1, Atxn7l3, Spryd3, Rasgef1b, Sox6, Pappa, Rfx3, Akt3, Rnf111, Shoc2, Apln, Col12a1 , Clock, Bcl2l2, Lhx4, Zdhhc24, Pcmb1, Ski, Wdtc1, Dll1, Eif2c4, Ptpr, Cc2d1b, Myt1l	Ubfd1, Atxn7l3b, Luzp1, Atxn7l3, Spryd3, Rasgef1b, Prdm11, Sox6, Pappa, Rfx3, Akt3, Rnf111, Shoc2, Mybl1, Rbms1, Apln, Col12a1, Clock, Bcl2l2, Lhx4, Zdhhc24, Eif2c1, Pcmb1, Ski, Wdtc1, Dll1, Eif2c4, Ptpr, Cc2d1b, Myt1l
miR-31-5p	Satb2, Ppp3ca	Satb2, Ppp3ca	Satb2, Ppp3ca
miR-335-5p	Ahsa2, Dync2h1, Nckap5	Ahsa2, Dync2h1, Nckap5	Ahsa2, Dync2h1, Nckap5
miR-335-5p	Ahsa2, Dync2h1, Nckap5	Ahsa2, Dync2h1, Nckap5	Ahsa2, Dync2h1, Nckap5
miR-379-5p	Lphn3, Sp3tc1	Lphn3	None
miR-434-3p	Mybpc3, Lin7a, Sp9, Ccnl1	Mybpc3	None
miR-511-3p	Sema3a, Bbx, Galnt7	None	None
miR-5617-5p	Rfx3, Pbx3	None	None
miR-379-5p	Lphn3, Sh3tc1	Lphn3	None
miR-31-3p	Nfia	None	None
miR-136-5p	Cpeb2	None	None
miR-411-5p	Maml3	None	None
miR-709	Mbd6	None	None
miR-185-3p	R3hdm2	None	None
miR-136-3p, miR-127-3p, miR-376a-3p, miR-434-5p, miR-376b-5p, miR-434-5p, miR-541-5p	No interaction found	---	---

S2 Table: miRNA target identified on miRDB.

Target Rank (left to right)	Target Score	miRNA Name (mmu)	Target Gene Symbol (target score high to low) on miRDB
1 to 11	80-99	miR-196a-5p	Hoxc8, Zmynd11, Ccdc47, Rcc2, Rgl2, Slc9a6, Hoxb7, Neto2, St6galnac3, Epc2, Trp53bp2,
1 to 11	>80-99	miR-196b-5p	Hoxc8, Zmynd11, Ccdc47, Rcc2, Rgl2, , Neto2, Epc2, Trp53bp2, St6galnac3, Hoxb7, Slc9a6
1 to 22	>80-99	miR-31-5p	PKCE , Rsbn1, Slc1a2, Mbni3, Rhbdl3, Ovca2, Jazf1, Scn2a1, 4921501E09Rik, Ppp1r3d , Pik3c2a, Cpsf2, Depdc5, Ispd, Zfp799, Slc6a6, Elovl7, Igsf11, Ikzf1, Pcgf6, Cntln, Gpd1l, Serpinb5
1 to 8	>80-93	miR-31-3p	Kif1b, Klhl31, Lrrc42, Tbc1d30, Pvr, Zfp2, Yes1, Frs2
1 to 13	>80-91	miR-136-5p	Mtmt4, Chrdl1, Braf, Trpc4ap, Gria1, Mdm1, Taf7, Etf1, Zfp532, Rpusd4, Mab21l1, Atrn, Mid2
1 to 8	>80-91	miR-411-5p	Eifn1, Eif4g2, St18, Cwf19l2, Irf2bp2, Ptx3, Nfatc2ip, Smarca2
1	86	miR-434-5p	Cacna2d2
1 to 6	>80-100	miR-379-5p	Rfng (target score=100), Fbxl20 (target score=100), Themis, Eif4g2, Tex2, Ube2e3
1 to 48	>80-100	miR-709	Armc9 (target score=100), Cbx5, Zfyve27, Coro2b, Leng8, Cbfa2t3, Lnp, Mid1, Nrf1, Ptprn7, A630055G03Rik, D330012F22Rik, Iqce, Rnf213, Cntn2, Nav1, Adora2b, Ypel2, Onecut3, Tubb5, Myst2, Psmb11, Rg9mtd2, Dixdc1, Cbfa2t2, Myc , A430033K04Rik, Fem1a, Serpina3n, Stk39, 9830001H06Rik, Rnf165, Gga2, Scube1, 1110028C15Rik, Fbxl17, Trp53i11, Ap3m1, Stox2, Ncoa3, Tpbg, Tmem179, Slc9a8, Mbd4, Dlgap1, Plxna2, Naa50, Usp22
0	>80	miR-136-3p	None
0	>80	miR-127-3p	None
0	>80	miR-376a-3p	None
Target Rank (left to right)	Target Score	miRNA Name	Target Gene Symbol (target score high to low) on miRDB
1 to 19	>80-90	miR-335-5p	BC003965, Enpp4, Nt5dc3, Mtap6, Rab3c, Hnrnpr, Wdr26, Homez, Thap2, Rab11b, Gm608, Sorcs1, Etf1, Pole4, B4galt4, Efr3a, Nrnx1, Commd2, C430048L16Rik

1 to 10	>80-88	miR-434-3p	Tmem207, Cyp26b1, Nck1, Gem, Pla2g16, Dcaf6, Snurf, Snrpn, 4933403F05Rik, Rnf139
1 to 60	>80-99	miR-377-3p	Rnf38, Thsd7a, Trip12, Zbtb4, St8sia4, Tmx1, Grsf1, Zadh2, Pitx2, Mga, Bend6, Aqp4, Nudcd2, Cdon, Cul1, Zfp187, Blhle23, Larp4, B230219D22Rik, Rasa1, Armc8, Phf6, Paxip1, Fbxl17, Ncoa6, Kcnj8, Slc6a19, Npsr1, Stk35, Agpat4, Arid4b, Btg3, Hspbap1, Sumf1, Ube2h, Nip7, 6720489N17Rik, Rsbn1, Slc7a11, Dnajb9, Xiap, Shisa5, Bend3, Rfx3, Cpsf6, Nt5c3l, Nts, Bcl2l1, Zfp462, Pafah1b2, Areg, Plcb1, Hexim1, A730037C10Rik, Gas2l3, Nudt11, Crebl2, Ghitm, Wdr6, Zfp148
1 to 61	>80-99	miR-511-3p	Treml2, Sema3a, Tjp1, Tnrc6b, Tmem229a, Camk4, Nbeal1, Lpp, Tank, Colec10, Mapk6, Pank4, Golt1a, Fech, Slc28a3, Dcun1d3, Bbx, Rock2, Aktip, Fuca2, Srp54a, Zfp192, Pofut1, Gabrb3, Plscr1, Nox4, Cdc14a, Pou2f1, Sap30, Zfp641, 9430020K01Rik, Fndc3b, 41524, Xpo7, Tfap2b, Baz1a, Dcaf17, Tnfrsf21, Gm8369, Ncam2, Ccdc125, Fbxo5, Slc5a7, Rnasel, Dclre1b, Eda2r, Ddx17, LOC100045026, Pum1, Adamts5, D630023F18Rik, Slc7a11, Osbp16, Ugt1a9, Txlnb, Ugt1a1, Ugt1a2, Ugt1a6a, Ugt1a5, Ugt1a10, Ugt1a7c
1 to 19	>80-96	miR-5617-5p	8030462N17Rik, Rsf1, D4Ert22e, Pkn2, Ccr4, Ube2j2, Gria2, BC068281, Neurl4, Pafah1b1, Fgf13, Fam175b, Mapk1ip1l, Edem2, Slc6a14, Fut9, Tnrc6b, Hecw2, Arid2
1 to 59	>80-95	miR-691	Plod2, Rod1, Nhsl2, B230209E15Rik, A730037C10Rik, Homer2, Csrp2bp, Cdr1, Actl6a, Foxi2, Slc4a8, Bnc1, Tmem55a, Tmem229a, Gbas, Gtf2h1, Tmem184b, Kcnq5, Dram2, D3Ert2751e, Sult1b1, Snurf, Snd1, Hd1bp, Cnpy1, N4bp2l2, Fam175b, Tctn3, Ube2g1, Slc16a5, Lpp, Syn3, Cndp1, C330027C09Rik, Top1, Tmcc3, Pcdh17, Gm11992, Ccdc117, Trh, Ccnt2, Rbm18, D19Ert2737e, Erp44, Gm7969, Tob2, LOC100505143, Mfsd1, Col19a1, Ubn2, Bcl11b, Adamts16, Gramd3, Camsap2, Eph4a5, Slc17a8, Tmem167, Klhl24, Cpsf2
1 to 19	>80-96	miR-154-5p	Kctd14, Cul2, Ubtd2, Mmp20, Dock1, Sos2, Msl2, Sp4, Chm, Serpinb2, Cog7, Ppp2r2a, Cpne4, Rspn4a, E2f5, Myst2, Asap2, Eps15, Qk
1 to 46	>80-97	miR-206-3p	Rufy2, Sri, Rfesd, Col4a3, Kalrn, Gja1, Entpd7, Ankib1, Bdnf, Coro1c, Ets1, Ankrd29, Gnpda2, Lrrkip1, Kif2a, Tbc1d15, Edn1, Zfp280d, Cmpk2, Rit2, Arcn1, Serp1, Rsbn1, Snx2, C77370, 1110003E01Rik, Wdr48, Fam150b, Hmcn1, Slc29a3, Pax3, Rrbp1, Meox2, Fbxo33, 2410075B13Rik, Ptpn14, Cebpz, Foxp1, C1galt1, Smarcb1, Hnrnpa3, Dcaf12l1, Igf1, Fndc3a, Slc35a5, Pde7a
1 to 22	>80-92	miR-376b-5p	Tigd4, Zfp1, Eif2ak2, Bnip3l, Cacnb4, Heca, Sfxn1, Fbxl3, Ptgs2, Ttc9c, Acss1, Syne1, 1110067D22Rik, Gm609, Hsf3, Bclaf1, Magi2, 4930417G10Rik, Prrx1, Rgs5, AI593442, Hrasls

1 to 20	>80-97	miR-185-3p	Nr5a1, Cbfa2t3, Vamp2, Vat1, Tnrc6b, Gm10862, Ehd1, Fam57b, Cadm3, Kcnk3, Ptpn1, Add1, Fmod, Mboat4, Unc13a, Wscd2, Zfp236, Tusc5, Vipr1, Rnf165
1 to 6	100	miR-379-5p	Rfng (target score=100), Fbxl20 (target score=100), Themis, Eif4g2, Tex2, Ube2e3
1 to 8	>80-91	miR-411-5p	Elfn1, Eif4g2, St18, Cwf19l2, Irf2bp2, Ptx3, Nfatc2ip, Smarca2
1	86	miR-434-5p	Cacna2d2
1 to 24	>80-98	miR-3065-3p	Fam135a, Xkr6, Ubtd2, Adamts15, Aplf, Wac, Smek2, Camk2g, Lsm14a, Dio2, 3830406C13Rik, Nfia, Palm2, Il1rapl2, Ppm1d, Ankrd49, Scn9a, Hmgcs1, Dusp22, Ric8, Blmh, Camsap1, Stag2, Mest
1 to 11	>80-87	miR-541-5p	Grm7, Lysmd3, Kcnmb2, Acvr1b, Gab1, A830010M20Rik, Stk3, Hoxd10, Paqr5, Zfx, Plaa
1 to 113	>80-100	miR-322-5p	Mapkap1 (target score=100), Fgd4, Btrc, N4bp1, Strbp, Pacsin2, Tacc1, Ankib1, Lrp6, Hsd17b7, Etnk1, Gm10220, Vapb, 5031410I06Rik, Kl, Rasgef1b, Aff4, Usp14, Tbl1xr1, Luzp1, Mapk8, 1700025G04Rik, Fbxl20, Wee1, Ubn2, Tlk1, 2700078E11Rik, Myt1l, Crebl2, Srpr, Kif5c, Cds2, Phf19, Wipi2, Ttc14, Ahcyl2, Pldn, Ccnt2, Rnf10, Kif21a, Actr2, Plekhh1, Eif3a, Cask, Sall1, Onecut2, Prkar2a, Col5a1, Csde1, Zik1, 2310008H09Rik, Pappa, Hus1, Plcxd2, Zfp592, Nfatc3, Ubfd1, Cd2ap, Mgat4a, Mtmr3, Dclk1, Ssr1, Nuak2, Fam164a, Lrp2, Ash1l, Reep1, Capza2, Zfp609, Mob4, Abhd13, Phc3, Gm10471, Mkks, Exoc8, Ccne1, Kif23, Lats1, Nup210, Tbx22, Cpd, Tmem135, Traf3, Ppp6c, Slc20a2, Ddx3x, Mfn2, Slc4a8, Cdc25a, Lats2, Zbtb5, Polr3f, Stxbp3a, Cdc14b, Col4a3bp, Rab9b, Atp7a, Sgk1, Col24a1, Eya1, Ppm1d, Gpatch8, Nf1, Fam133b, Rad23b, Entpd7, Ywhah, LOC100504975, Avl9, Ppap2a, Slc1a4, 2400003C14Rik, Fshb